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Job No.: CQCE/BBMP/KTR /W.No.15/2018-19 Date : 26.11.2018

GRADATION FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency : **Sri. K.T. Ramesh,** Contractor, Bangalore.
Name of Work : Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
Reference : EE/DD/WO/227/2017-18 Dated: 12.02.2018

Date of Testing : 26.11.2018
Material Type : Wet Mix Macadam

Oven Dry.Wt 10500

Is Sieve Size in mm	Weight Retained (gm)	Cumulative Weight Retained (gm)	Cumulative % of Retained	Cumulative % of Passing	Spec.Limits
53	0	0	0	100	100
45	415	415	4.0	96.0	95-100
22.4	3465	3880	37.0	63.0	60-80
11.2	2160	6040	57.5	42.5	40-60
4.75	1487	7527	71.7	28.3	25-40
2.36	1260	8787	83.7	16.3	15-30
0.600	798	9585	91.3	8.7	8-22
0.075	460	10045	95.7	4.3	0-8

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Job No.: CQCE/BBMP/KTR /W.No.15/2018-19 Date: : 26.11.2018

Aggregate Impact Value

IS: 2386 Part IV

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. K.T. Ramesh,** Contractor, Bangalore.
Name of the Work	Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
Reference	EE/DD/WO/227/2017-18 Dated: 12.02.2018
Type of Mix	Wet Mix macadam
Date of Testing	: 26.11.2018

Sl No.	Details	Trial No. 1	Trial No. 2	Trial No. 3	Average
1	Total weight of aggregate sample filling the cylindrical measure = W_1 g	375	377	379	
2	Weight of agregate passing 2.36 mm sieve after the test = W_2 g	83	85	87	
3	Weight of aggregate retained 2.36 mm sieve after the test = W_3 g	292	292	292	
4	Aggregate Impact value = percent fines 100* (W_2/W_1)%	22.13	22.55	22.96	22.54

Comments:

→ Maximum allowable Aggregate Impact value for Wet mix Macadam is 30%

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Job No.: CQCE/BBMP/KTR /W.No.15/2018-19

26.11.2018

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. K.T. Ramesh,** Contractor, Bangalore.
Name of Work	Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
Reference	EE/DD/WO/227/2017-18 Dated: 12.02.2018
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Wet Mix Macadam
Sample ID	WMM Layer
Date of Testing	26.11.2018

Result : Flakiness Index = **12.36%**

Elongation Index = **13.98%**

Result : **Combined Flakiness & Elongation index** **26.34%**

Comments:

Maximum allowable Flakiness & Elongation Index for Wet Mix Macadam is 30%

Note:

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Job No.: CQCE/BBMP/KTR /W.No.15/2018-19 Date : 26.11.2018

ATTERBERG LIMITS TEST FOR WMM
MORTH TABLE-400-11

Client : **Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency : **Sri. K.T. Ramesh,** Contractor, Bangalore.
Name of Work : Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
Reference : EE/DD/WO/227/2017-18 Dated: 12.02.2018
Date of Testing : 26.11.2018
Material Type : Wet Mix Macadam

As per MORTH Table 400-13

Sl. No.	Particulars	Test Results	Standards as per Specifications
1	Liquid Limit	23.50	-
2	Plasticity Index, %	Non Plastic	6.0% Maximum.

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Job No.: CQCE/BBMP/KTR/W.No.15/2018-19 03.12.2018

DETERMINATION OF FLAKINESS INDEX & ELONGATION INDEX OF COARSE AGGREGATES

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. K.T. Ramesh,** Contractor, Bangalore.
Name of Work	Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
Reference	EE/DD/WO/227/2017-18 Dated: 12.02.2018
Technical Reference	IS 2386(Part 1) 1963 (RA 2011)
Type of Mix	Bituminous Macadam
Date of Testing	03.12.2018

Result : Flakiness Index = **12.19%**

Elongation Index = **13.62%**

Result : Combined Flakiness & Elongation index **25.81%**

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Job No.: CQCE/BBMP/KTR/W.No.15/2018-19 06.12.2018

Aggregate Gradation Test

IS : 2386 Part I

Client	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	**Sri. K.T. Ramesh,** Contractor, Bangalore.
Name of theWork	Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
Reference	EE/DD/WO/227/2017-18 Dated: 12.02.2018
Sample I / D	Hot Mix Plant, Bangalore
Type of Mix	Bituminous Concrete
Date of Testing	06.12.2018

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	460	9.20	9.20	90.80	79 - 100	
9.5	480	9.60	18.80	81.20	70 - 88	
4.75	736	14.72	33.52	66.48	53 - 71	
2.36	549	10.98	44.50	55.50	42 - 58	
1.18	510	10.20	54.70	45.30	34 - 48	
0.600	728	14.56	69.26	30.74	26 - 38	
0.300	536	10.72	79.98	20.02	18 - 28	
0.150	325	6.50	86.48	13.52	12 - 20	
329	360	7.20	93.68	6.32	4 - 10	

Total Weight of Sample: **5000** gm

SIEVE SIZE, mm	Weight Retained, gm	% Retained	Cummulative % Retained	% Passing	JOBMIX Gradation as per MORTH	Remarks
19	0	0	0	100	100	Gradation satisfies Bituminous concrete Grade-II specification as per MORTH
13.2	515	10.30	10.30	89.70	79 - 100	
9.5	470	9.40	19.70	80.30	70 - 88	
4.75	769	15.38	35.08	64.92	53 - 71	
2.36	560	11.20	46.28	53.72	42 - 58	
1.18	520	10.40	56.68	43.32	34 - 48	
0.600	658	13.16	69.84	30.16	26 - 38	
0.300	530	10.60	80.44	19.56	18 - 28	
0.150	365	7.30	87.74	12.26	12 - 20	
0.075	318	6.36	94.10	5.90	4 - 10	

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Job No.: CQCE/BBMP/KTR/W.No.15/2018-19 Date: 06.12.2018

TEST REPORT ON STABILITY OF MIX

Client	:	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
Agency	:	**Sri. K.T. Ramesh,** Contractor, Bangalore.
Name of the Work	:	Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
Reference	:	EE/DD/WO/227/2017-18 Dated: 12.02.2018
Source of location	:	Hot mix Plant, Bangalore
Type of Mix	:	Bituminous Concrete
Date of Testing	:	06.12.2018

The results of the tests conducted on the bituminous concrete mix sample are as follows:

Sl. No	Description	Test Result 1	Test Result 2	Requirement as per MORTH (Table 500-19)
1	Marshal Stability, Kn	9.63	10.21	9 Kn (min)
2	Marshal flow, mm	3.68	2.48	2 – 4
3	Percent air voids in Mineral Aggregate	13.65	14.12	13 – 15
4	Voids in Compacted Mix	4.63	5.58	3 – 6
5	Percent Voids filled with Bitumen	70.59	71.21	65 - 75
6	Density, g/cc	2.26	2.27	--

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Job No.: CQCE/BBMP/KTR/W.No.15/2018-19 06.12.2018

BITUMEN CONTENT AND GRADATION DETERMINATION OF BITUMINOUS CONCRETE

CLIENT	**Executive Engineer,** Dasarahalli Division, BBMP, Bangalore.
AGENCY	**Sri. K.T. Ramesh,** Contractor, Bangalore.
NAME OF THE WORK	Improvements and Reasphalting road from St. Marys School Back Side road and Eagle Bakery to 5th cross in Dasarahalli Ward No.15, BBMP, Bangalore.
REFERENCE	EE/DD/WO/227/2017-18 Dated: 12.02.2018
SAMPLE I/D	Sample Supplied by Agency
DATE OF TESTING	06.12.2018

BITUMEN CONTENT DETERMINATION

Description	Sample 1	Sample 2
1. Weight of Mixture before Test, g	500	500
2. Weight of Mixture after Test, g	469	468.5
3. Weight of Asphalt and Mineral matter Extracted, g	31	31.5
4. Weight of Mineral Matter, g.	-	-
5. Weight of Ash, g	-	-
6. Weight of Bitumen Extracted, g. (corrected)	29	31.5
7. Bitumen content in %	5.80	6.30
8. Average	**6.05**	

GRADATION AFTER EXTRACTION

TABLE - 1

SIEVE SIZE	Percent Passing, %		JOBMIX
mm	Sample 1	Sample 2	Gradation
19	100.00	100.00	100
13.2	95.26	97.20	79-100
9.5	83.21	85.23	70-88
4.75	65.28	66.32	53-71
2.36	52.30	51.35	42-58
1.18	41.25	42.15	34-48
0.6	34.89	32.85	26-38
0.3	24.87	26.50	18-28
0.15	16.50	15.41	12-20
0.075	7.50	8.20	4-10

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